

Boulder Design Excellence

Form-Based Code Pilot

City of Boulder, Colorado



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Design Excellence Initiative / Form-Based Code (FBC) 2015 DRAFT Work Plan

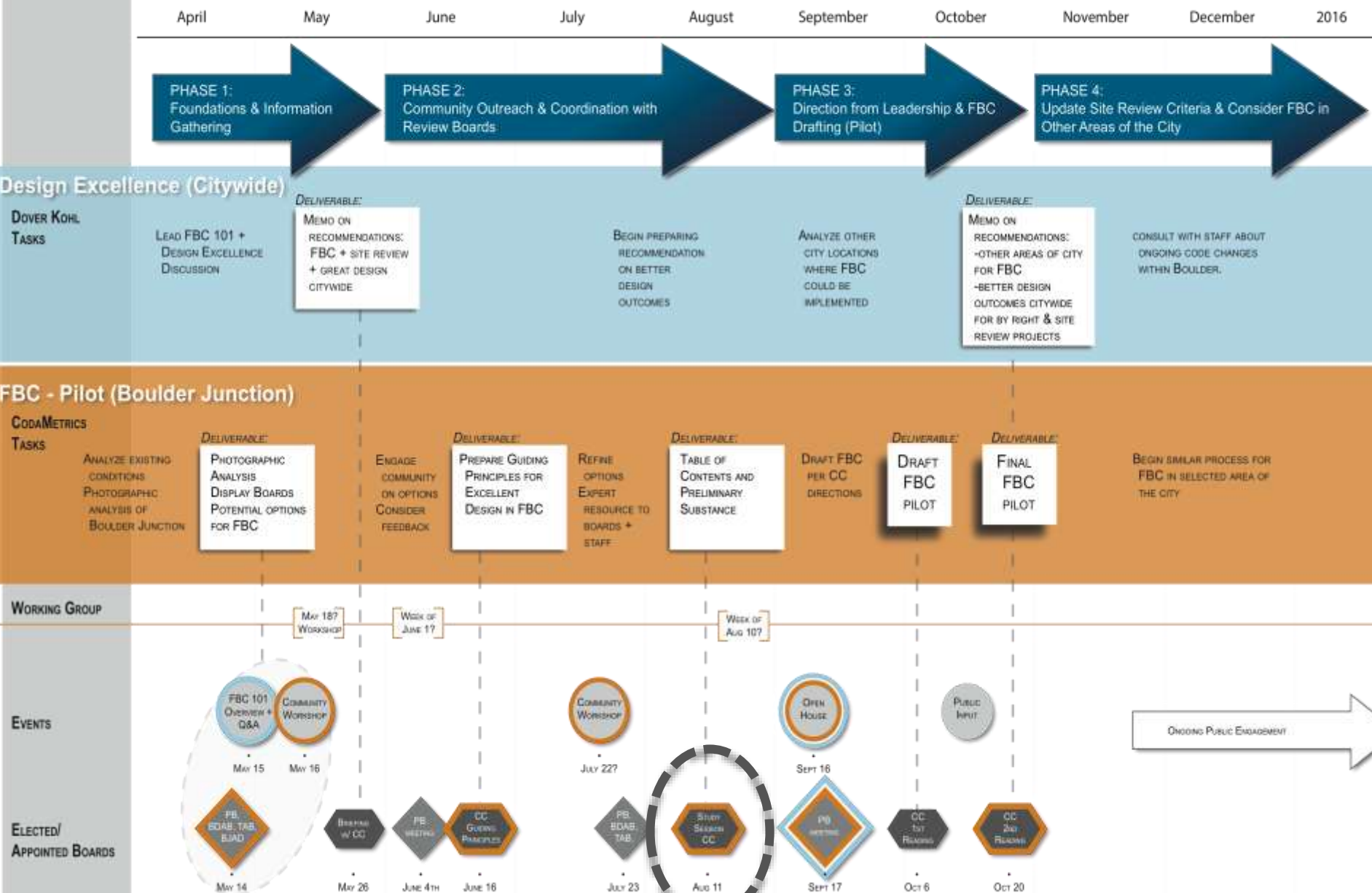


IMAGE PREFERENCE SURVEY

Mixed Use Buildings

Residential Buildings

Pedestrian Realm

Mixed-Use Buildings IPS Results

Top Images



- Taller corner as punctuation to corner
- Variety
- Good openings
- Obvious storefront
- Lots of doorways on street
- Like scale, materials, articulation
- Not enough shade or street proximity in high summer sun
- Shorter buildings feel more “human scale”
- This works well – holds corner well



- Elegant proportions
- Lots of windows/depth despite being massy
- Holds corner
- Windows set in
- Street trees
- Depth
- Awnings
- Like corner presence
- Like recess of windows in the buildings



- Approachable
- Good pedestrian scale
- Kick plate better than floor to ceiling windows
- Like - Balcony extended, not recessed
- Friendly pedestrian zone
- Like - Base bays extend
- Don't like static form
- Balconies are strange



- Stronger corner would be good
- Store front
- Balconies varied, not roof lines – also help with depth and shadow
- Exposed balcony is bad, compared to protected balconies or setback balconies

Mixed-Use Buildings IPS Results

Bottom Images



- Strange roof lines; poor roofline
- No relationship between top and bottom of building
- Roof line bugs me, but base works
- Arbitrary roofline is no good
- Looks too indicative of east coast/seaport style; should feel more agrarian (should reflect local vernacular)
- Looks out of place



- Would like mass on corner rather than void
- First floor is squat
- Dropped out of the 1960s
- White material choice looks shoddy – panels might look better



- Artful and well done
- Pedestrian experience not great
- No depth to façade
- Monolithic
- Boxy
- Looks like legos
- Color scheme is problematic
- Too separated from sidewalk

Residential Buildings IPS Results

Top Images



- Visually interesting
- Not too repetitive
- Good social spaces
- Railings look out of place
- Don't like the ornamentation of brick – draws eye up in the wrong way
- Porches are great
- Like traditional brick façade
- Good proportion, scale, and windows
- Not urban enough; porch is country-look



- Porches are great to interact
- Seems urban enough



- Nice stoops
- Friendly/ inviting
- Traditional flare
- Windows are dimensioned appropriately
- Like tree line
- Too much brick façade



- Like mix of color – playful
- Like articulation
- Kentucky or New Orleans cottage; does not mix with TOD or modern transit development
- Materials are the problem, not concept or composition
- Porches
- Small scale
- Mix of shapes
- Opportunity to create new precedent – more urban
- Differentiation between the units/entry ways
- Roofing inappropriate
- Elements of traditional housing
- Form is good
- Colors are appealing

Residential Buildings IPS Results

Images Preferred by Joint Boards



- Positive – limited palette of materials
- Like ins and outs, but consistent plane without being busy
- Like transparent
- Unifying elements throughout
- Don't like dark color
- Like stores on street, activity on sidewalk
- Too large of scale for Boulder Junction
- Tall – like big blocks of matching materials
- Simple and holds its pieces as unique and separate instead of commingling
- Multiple materials feel like a “trick” to break down the scale
- 3 stories would be good
- Enjoy corner feature – strength on the corner, clocktower or some element



- Like rhythm
- Like richness of materials
- Stoops engage the street
- Good street presence
- Negative – reads more like office, don't like flatness of roof
- Pedestrian-friendly
- Good interface with street
- Looks lived-in
- Good materials
- Negative – hiding upper story?

- Good material palette
- Recessed balcony
- Durability and maintenance of façade will be expensive, but looks better than the bright wood
- Quality of materials, simplicity, and spacing



- Good materiality – looks durable, simple, two dominant materials
- Like vertical elements
- Like compact, efficiency
- Like discernible pattern – not random, but enough variation
- Roofline is interesting
- Like rhythm, repeating forms
- Like richness of materials
- Strong streetscape, like street trees
- Like distinct top and bottom
- Negative – dated (could be)

- Really like the 2 materials – stucco and red; like 2 colors – not too many
- Vertical proportions feel compact and efficient – appropriate for Boulder Junction
- Glass looks “market rate” not “low-income” – is there enough privacy? Glass is interesting. Like glass.
- Like multiple entrances – articulates façade
- Roof is interesting
- Simple, progressive, but modest
- Tower, roof lines are too stark
- Stairs are good
- Like towers.
- Hat[?] is hideous – for lighting?

Residential Buildings IPS Results

Bottom Images



- Materials look dated
- Too many colors/materials
- Too 2-dimensional
- Looks like wallpaper
- Why cut off with fence



- Horrific; blocky
- Reads industrial
- Poor details; zero ornamentation
- Feels temporary
- Prefer vertical windows to horizontal
- Landscape is bad
- Use industrial materials
- Rocks are bulky and weird
- Doesn't fit, feels cheap
- Rip rock foundation walls – materials are good, modern
- Fits the street traffic on 28th
- Do not like covered stairway
- Lacks appeal because it looks cheap, window construction and simplistic building overly styled and will not stand the test of time – not an enduring cool



- Too suburban
- Set back too far
- Visual clutter
- Too many white elements
- Like green in front of building
- This scares me!
- "visual noise"
- Ghastly; looks cheap and decorated
- Lacks site specificity and integration
- Roof line not good; too peaked
- Didn't like scale
- Reminds me of Westminster



- Looks institutional
- Not pedestrian friendly
- Suburban/cookie-cutter
- Not Boulder character
- Not progressive
- Window proportion is too small
- Very flat, cheap façade
- Feels institutional
- Do not like the secluded car-oriented entrance
- White trim needs to be contextual
- Dining hall
- Shouldn't be duplicated

Streetscape IPS Results

Top Images



- Positive – hide sidewalk, but interesting
- Tall windows – transparency
- Like simplicity of materials
- Building has variation, but not overly
- Like interest on both sides of walk
- Sidewalk feels narrow
- Feeling of enclosure
- Like building design
- Like light fixture, planters, width of sidewalk
- Awning feeling good
- Narrow sidewalk
- Active space
- Inviting building entrances
- Love this – recessed doors, varied landscape, glass
- Like the transparency of the windows
- Overhang of façade extending into street



- Negative – narrow, but feels intimate
- Likes softness with materials, and not uninviting
- Likes canopy, but mulch might be too much
- Healthy landscape materials
- Like detached walk with plants on both sides
- Like on-street parking, parallel parking is friendly
- Like building height and trees – provide more comfortable sidewalk
- Building has variation, but not overly
- Sidewalk is a bit narrow, but good in residential
- Like green and entryways
- Seems comfortable, nice to sit on porches
- Inviting; like landscaping
- Good setback
- Is tree or planting bed better? – can tree thrive?
- Sidewalk is narrow – should be wider
- Appropriate for residential
- Greenery
- Front is set back, but not a place to stop; building has a social space – set back
- Shade and green overwhelmed with too much concrete
- Not bike friendly
- Sense of enclosure – mature trees
- Too close with branches; safety issue with snow and branches falling down
- Narrower sidewalk perhaps more efficient for lower traffic areas
- Should use separated bike lanes
- Porches toward pedestrian streets are good – not toward car streets
- Love narrow width – feels urban and comfortable
- Like break between sidewalk and street
- Transition is great with help of vegetation

Streetscape IPS Results

Top Images



- Like seating, but needs to be interesting
- Building face is pleasant; like articulation
- Like mixture of plants
- Like width of sidewalk-scape
- Like staggered depths of buildings
- Narrow sidewalk makes more cozy and width of street
- Like buffer between parking and walk – room for street furniture
- Attractive place to linger – slanted parking, trees need to grow up
- Like seating, parking
- Good for pedestrians
- Angle parking has more mass
- Variation of building materials at ped level is good; material change; in and out of façade; differing articulation
- Planter not good; too small to be useful, and feels in the way
- Tree grates better than grass – raised beds okay too; mulch or rocks okay
- Love – feels interesting
- Proportion of width in walkway is nice



- Like tree/landscaping separation
- And is long enough buffer
- Wide sidewalk
- Good landscaping
- Elevation change
- Not drawing in, no access points
- Landscape, buildings feel good
- Street trees
- Like awnings and flags



- Negative – Pull-in is more aggressive than parallel parking
- Like head-in parking
- Like cars and landscaping and seating
- Seating is key
- Overhangs are very pedestrian-friendly
- Like canopy overhead
- Like materials, shape, and landscaping
- Very attractive space
- Okay for retail only – like overhangs
- Having 2 walking areas is weird
- Too much grade change
- Flower bed rather than ground cover is more inviting

Streetscape IPS Results

Bottom Images



- Poor pedestrian experience, looking down and see entrance far away
- Don't like that building is below sidewalk
- Sloping landscape is bad
- Odd to go down to entrance – prefer to go up
- If residence, gives privacy
- Bike not like it
- Sinking off of sidewalks detracts from public use
- Grade separation makes it uncomfortable and divisive



- Close to street, trees, column
- Looks a little cheap
- Weird sidewalk feels like you will fall off onto street
- Design of building does not give a strong residential feel
- Building is very enclosed



- Feels weird with building, overhang feels overbearing
- Like arcade but is narrow, and has hard edge
- Proportion is off too much for parking – need more people
- Needs parallel parking
- Black/brown nice
- Nice if there were plants
- Has to interact with other place and people – needs to connect more
- Windows should be set in
- Tasteful modern design
- Quality building
- Needs more human scale
- Arcade is okay, but needs landscaping
- Feel like sitting in parking lot; cars too close
- Not inviting; dark, unsafe looking; arcade is cave-like
- Canopy & seating can help
- Arcade coverage good to provide shade/multiuse, but must be wide/high enough for multiple use



- Hard to activate space, too big of setback and dead space
- Barren, no landscaping
- Big windows, but no doors
- Very little awnings (negative)
- Trying to add variation in landscaping, but fails
- Barren and straight
- Materials are good, but façade is still boring
- Don't like zero setback – too harsh
- Like planting area and space with trees and benches
- Strange depth too far from street – lonely and exposed

Streetscape IPS Results

Bottom Images



- Too much setback
- No relationship to street
- Street is too far – dividing private/public
- Fence is a barrier
- Should not separate public and commercial
- Building set back too far; don't see people using area
- Poor connectivity
- Don't like wall and fence
- Walking freeway
- Narrow sidewalk – like space between sidewalk & building
- Kid can move
- Moat condition is impenetrable



- Façade is flat, boring, institutional
- Street is not pedestrian friendly
- Planting strips "in center" of sidewalk
- Sitting there doesn't feel nice
- Building ruins streetscape and pedestrian experience
- Zero setback; no soft edge – is too harsh
- Don't like lack of base
- Not enough variation – blank wall, monolithic
- Windows do not invite
- No entries, activity, or awning
- Lack of shape and form



- Ugly transformers along sidewalk – don't have utility boxes along street
- Has too much void and solid articulation
- Too much space between building and street edge
- No trees
- Building façade too busy
- Light fixtures are not pedestrian scale or anything human scale
- Street speed is too fast to make intimate space
- Like street parking along 30th and remove traffic lanes
- However, not terrible and functional sidewalk but transit-only (bike)
- Have to endure to go through
- Too stark and no access to buildings
- Like wide sidewalk
- Not inviting – too wide
- Invites bike because it's too wide
- Sidewalk not tied to building
- Don't like lawn on urban street; ugly, too much water needed

Recommendations Memo

Simple, Honest, Human Scaled

Key Components of the Code

Guiding Principles Memo

Key Components

Building Form

- Overall Building Siting
- Overall Building Height

Façade Design

- General Materials & Façade Design
- General Building Elements Design
- Cap / Roof Design
- General Quality of Construction & Detailing

Proportion

- General Building Composition

Public Realm Elements

- Street Types
- Open Space

Guiding Principles Memo

Overarching Goals

SIMPLE

- Fewer Materials
- Fewer Articulations
- Fewer unique elements
- More repetitions and regularity
- Simple hierarchy

Ways in which these objectives can be achieved in a zoning code:

To ensure simpler buildings, the code can address key issues related to building material, façade expression, and massing. For example, the code can specify the maximum number of materials allowed on a building or require that one dominant material cover a certain percentage of the principle façade. Code could also require façade expression lines (such as those indicating the top, middle, or bottom of a building) or indicate that buildings longer than a certain length must have a principle massing.



This building can be considered simple because: the palette is limited to three materials, there are only two articulations, it uses two simple additional elements (awning and balconies), and regular windows are repeated in a simple pattern.



This building received high marks on the survey. The palette is limited to one material, there is only one articulation, the windows, awnings, and decorative details repeat, and the corner tower provides a simple hierarchy.



This building is simple because the palette is limited to two or three materials and there is a regularity to the multiple

Guiding Principles Memo

Overarching Goals

HONEST

- Clear expression of uses within the building – especially the ground floor;
- Clear indication of main entrances to upper floors
- Honest structural expressions
- Honest uses of materials
- Buildings that can be considered "contemporary" or current in some ways (building technology, aesthetics, etc)
- No need to make a larger building look like a series of turn of the century buildings

Ways in which these objectives can be achieved in a zoning code

To ensure more honest buildings, the code can address key issues related to building entrances, massing, and façades. For example, the code can require first floor expression lines or façade compositions that reflect the uses inside the building



This building received high marks on the survey. It is honest because there is a clear differentiation of the uses between the floors, the entrances are clearly indicated, and one can easily understand the building structure by its form.



This building also received high marks on the survey. It is honest because the entrances are clearly indicated and one can easily understand the building structure and access by its form and elements.



This building is honest because there is a clear differentiation of the uses between the floors, the entrances are clearly indicated, and one can easily understand the building structure

Guiding Principles Memo

Overarching Goals

HUMAN SCALED

- Tactile materials at the ground floor
- Varied experience at the ground floor
- Massing that allows light and sun penetration to sidewalks and public spaces
- Façade and massing compositions that follow basic rules of proportions
- Comfortable public places to gather and to rest
- Marking the corner with height instead of void
- Opportunities for personalization
- Clear transitions between public and private spaces
- Variability in height

Ways in which these objectives can be achieved in a zoning code:

To ensure more buildings are human-scaled and comfortable, the code can address key issues related to the relationship of the building to the ground floor environment (sidewalk), materials, and massing. For example the code could require that building users or tenants are allowed to make use of the sidewalk or patio space. Building materials on the first floor could be deemed acceptable or unacceptable based on their tactileness. Buildings longer than a certain length may be required to follow certain massing articulation to create more comfortable proportions.



This building is human-scaled and comfortable because the porch not only provides a clear transition between public and private space but also allows for personalization.



This building is human-scaled and comfortable because its location and orientation allows light and air into a comfortable place for the public to gather and rest and the materials on the ground floor are tactile.



This building is human-scaled and comfortable because the materials at the ground floor are tactile and the façade and massing compositions follow basic rules of proportions.

WHAT IS A FORM-BASED CODE?

Definition

1 FORM-BASED CODES...

use physical **FORM** as the organizing principle for the code.

1 FORM-BASED CODES...

foster **PREDICTABLE** built results.

2 FORM-BASED CODES...

foster a high-quality **PUBLIC REALM**.

3 FORM-BASED CODES...

are **REGULATIONS**, not just guidelines, adopted into city law.

Draft Form-Based Code Components

Integration of the Code

Table of Contents

Public Realm Requirements


Building Types

Design Requirements

Zoning

Existing Zoning Districts – from the City Website

THREE ZONING MODULES:

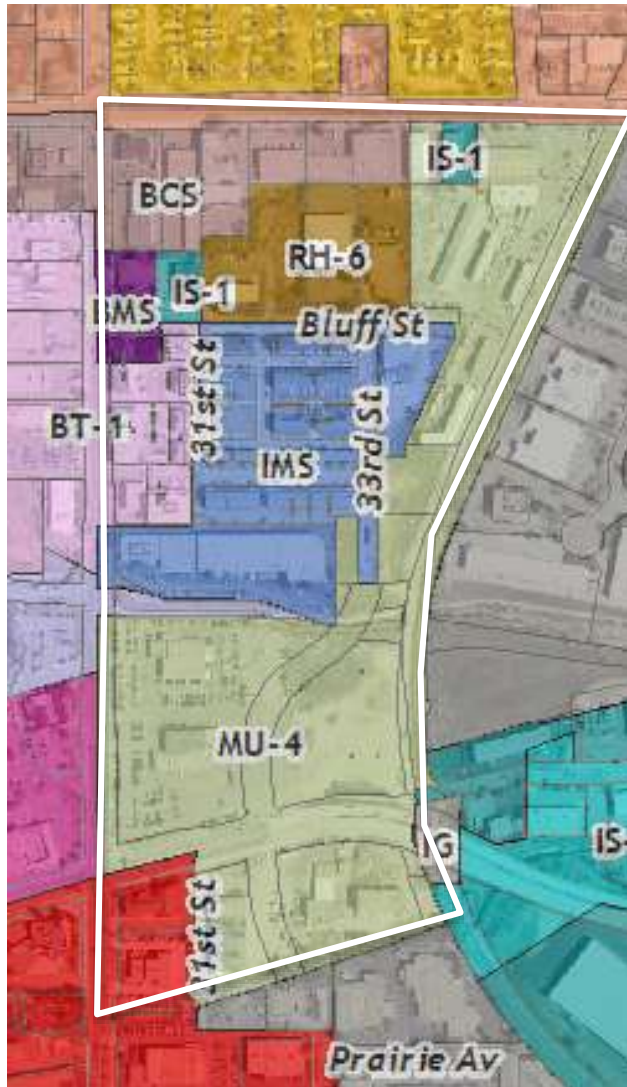
 **USE** - establishes the uses that are permitted, conditionally permitted and prohibited, as well as uses that may be permitted through a use review approval.

FORM - specifies the physical parameters for development, such as setbacks, building coverage, height and special building design characteristics.

INTENSITY - establishes the density of development and identifies the:
minimum lot sizes,
minimum open space per dwelling unit,
number of dwelling units per acre,
minimum open space per lot or parcel, and
floor area ratios, when applicable.

Existing Zoning

Zoning Districts: Uses



Zoning Districts

- MH Mobile Home (MH-E)
- RE Residential - Estate (ER-E)
- RH-1 Residential - High 1 (HR-X)
- RH-2 Residential - High 2 (HZ-E)
- RH-3 Residential - High 3 (HR1-X)
- RH-4 Residential - High 4 (HR-D)
- RH-5 Residential - High 5 (HR-E)
- RH-6 Residential - High 6
- RL-1 Residential - Low 1 (LR-E)
- RL-2 Residential - Low 2 (LR-D)
- RM-1 Residential - Medium 1 (MR-D)
- RM-2 Residential - Medium 2 (MR-E)
- RM-3 Residential - Medium 3 (MR-X)
- RMX-1 Residential - Mixed 1 (MXR-E)
- RMX-2 Residential - Mixed 2 (MXR-D)
- RR-1 Residential - Rural 1 (RR-E)
- RR-2 Residential - Rural 2 (RR1-E)
- BC-1 Business - Community 1 (CB-D)
- BC-2 Business - Community 2 (CB-E)
- BCS Business - Commercial (CS-E)
- BMS Business - Main Street (BMS-X)
- BR-1 Business - Regional 1 (RB-E)

V

V

Existing Zoning Uses

TABLE 6-1: USE TABLE

Zoning District	RR-1, RR-2, RE, RL-1	RL-2, RM-2	RM-1, RM-3	RMX-1	RMX-2	RH-1, RH-2, RH-4, RH-5	RH-3, RH-7	RH-6	MH	MU-3	MU-1	MU-2	MU-4	BT-1, BT-2	BMS	BC-1, BC-2	BCS	BR-1, BR-2	DT-4	DT-5
Use Modules	R1	R2	R3	R4	R5	R6	R7	R8	MH	M1	M2	M3	M4	B1	B2	B3	B4	B5	D1	D2
Residential Uses																				
Detached dwelling units	A	A	A	A	C	A	A	*	*	A	U	U	A	A	*	A	*	A	A	A
Detached dwelling unit with two kitchens	C	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Duplexes	*	A	A	A	C	A	A	*	*	A	A	A	A	A	*	A	*	A	A	A
Attached dwellings	*	A	A	A	C	A	A	C	*	A	A	A	A	A	n/a	A	*	A	A	A
Mobile home parks	*	U	U	*	U	U	*	*	A	*	*	*	*	*	*	*	*	*	*	*
Townhouses	*	A	A	A	C	A	A	A	*	A	A	A	A	A	*	A	*	A	A	A
Live-work	*	*	*	*	*	*	*	*	*	*	*	*	A	*	*	*	*	*	*	*
Cooperative housing units	C	C	C	C	C	C	C	*	*	C	C	C	*	*	*	*	*	*	*	*
Attached	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	G	n/a	n/a	n/a	n/a	n/a

Existing Zoning Uses

TABLE 6-1: USE TABLE

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Design Overlay

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EXHIBIT A: Regulating Plan

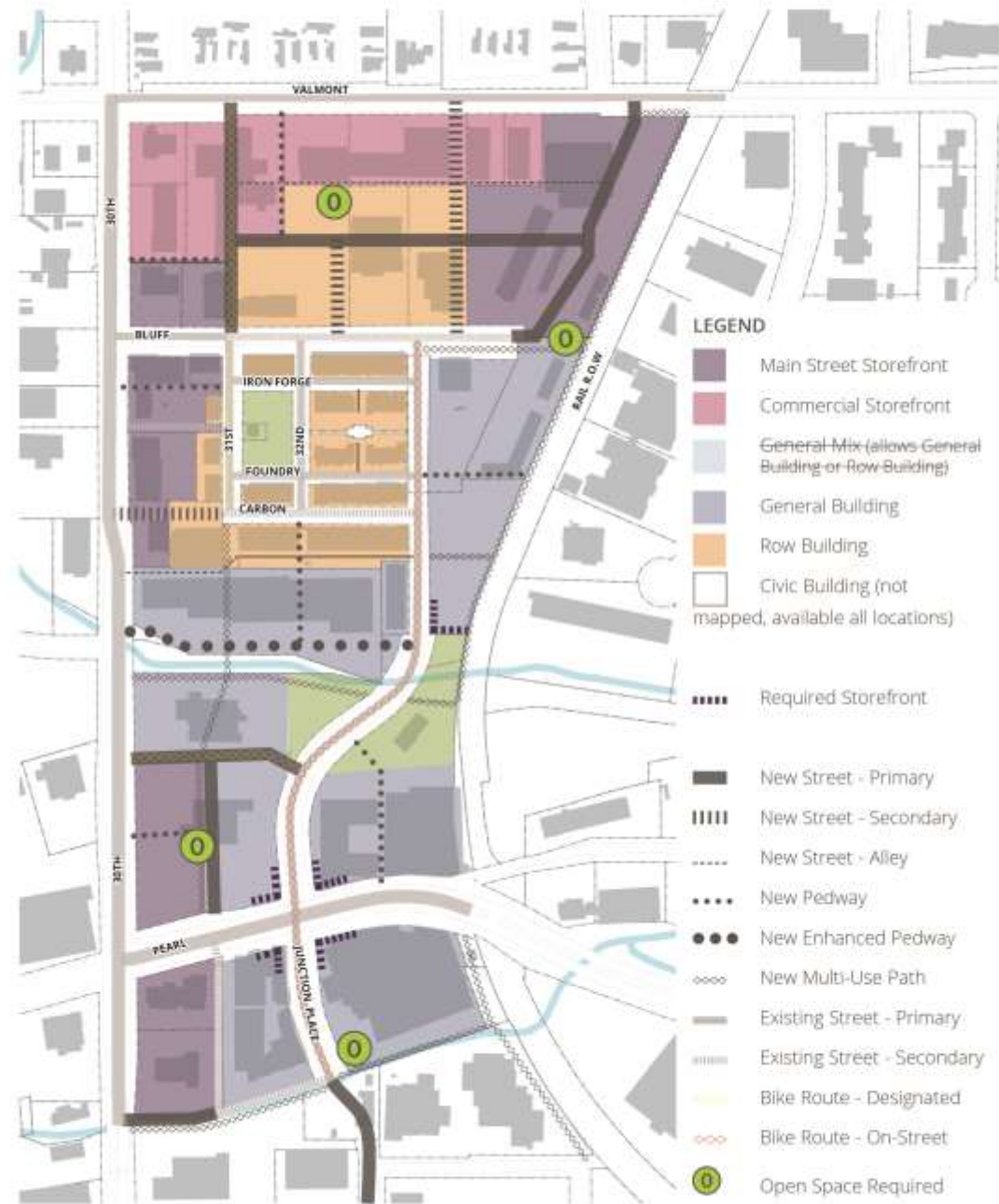
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Zoning Workshop

Draft Components

Regulating Plan & Building Types

- Color Codes locations where Building Types are permitted
- Defines Primary & Secondary Streets
- Locates Required Storefronts
- Illustrates New Streets, Pedways, & Paths



Draft Components

4 Main Building Types + Civic/Iconic Building



Main Street Storefront



General Building (Office or Residential)



Commercial Storefront



Row Building

Draft Components

Regulating Plan & Building Types

Building Types

Main Street Storefront Building

DRAFT

C. MAIN STREET STOREFRONT BUILDING

	BOULDER JUNCTION	OTHER CODE ADAPT
BUILDING SITING Refer to Figure 8B-1, 8B-2 for explanation of height requirements, & 8B-3 for height variability requirements.		
1 Minimum Primary Built-to-Zone Coverage	95% refer to Note 1	
2 Primary Built-to-Zone	8' to 12' refer to Note 2	
3 Secondary Built-to-Zone	8' to 12' refer to Note 2	
4 Minimum Side Yard Setback	8' 0" if abutting other building type	
5 Minimum Rear Yard Setback	8', 25' if occupied dwelling is residential	
6 Maximum Building Width	100% and greater required for each 100' segment of buildings over 150' wide along the street	
7 Maximum Site Coverage	75%	
8 Additional Semi-Permeable Coverage	25%	
9 Surface or Accessory Parking Location & Loading Location	Rear yard	
10 Permitted Driveway Access Locations	Off-alley, 2' no-alley width, and driveway permitted off accessory through	
HEIGHT Refer to Figure 8B-1, 8B-2 for explanation of height requirements, & 8B-3 for height variability requirements.		
11 Minimum Overall Height	12 stories	
12 Maximum Overall Height	1 stories, 50'	
13 Ground Story: Minimum Height	14'	
14 Ground Story: Maximum Height	12' refer to Note 3	
15 Upper Stories: Minimum Height	8'	
16 Upper Stories: Maximum Height	14'	

NOTES

1. Based per 2000 code coverage. Minimum Primary Built-to-Zone Coverage.
2. Use of 8' or 12' for 8' or 12' may change based on available street front. For profile areas. After any additional needed space, there are required 8' or 12'.
3. If 14' or more in height ground story shall height be 2 stories less than maximum building height.



Figure 8: Schematic diagram of a Main Street Storefront Building showing setbacks and height requirements.

DRAFT

Building Types

Main Street Storefront Building

	BOULDER JUNCTION	OTHER CODE ADAPT
USES Refer to Figure 8B-1, 8B-2 for explanation of height requirements, & 8B-3 for height variability requirements.		
1 Primary Frontage Ground Story	Retail, Service, Light Industrial, other uses only	
2 Secondary Frontage & All Upper Stories	Apartment, office	
3 Parking within Building	Permitted only in any basement and/or use of upper floors	
4 Garage Entrance Location	Permitted only on interior side or rear facade	
5 Required Occupied Space	80' West or 80' full height from the front facade	
FACADE & ROOF REQUIREMENTS Refer to Figure 8B-1, 8B-2 for explanation of height requirements, & 8B-3 for height variability requirements.		
6 Minimum Primary Frontage Ground Story Transparency	75%	
7 Minimum Required Transparency	25%	
8 Entrance Location & Number	Primary entrance required on primary facade entrance required a minimum of one per every 100' of building facade	
9 Entrance Requirements	Minimum 8' from the bottom of the primary facade to the street	
10 Entrance/Ground Story Elevation	80% of elevation and the ground story shall be within 1' of upper stories elevation	
11 Ground Story Vertical Facade Divisions	One per every 30' of facade width	
12 Horizontal Facade Divisions	Minimum 8' of the top of the ground story	
13 Facade Variety Required	Every 90' of facade width	
14 Permitted Roof Types	Flat, gabled, pitched, hip	

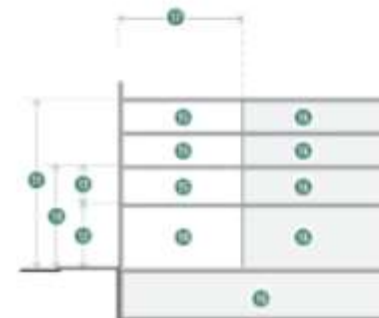


Figure 9: Schematic diagram of a Main Street Storefront Building showing facade requirements.



Figure 10: Schematic diagram of a Main Street Storefront Building showing street facade design requirements.

Draft Components

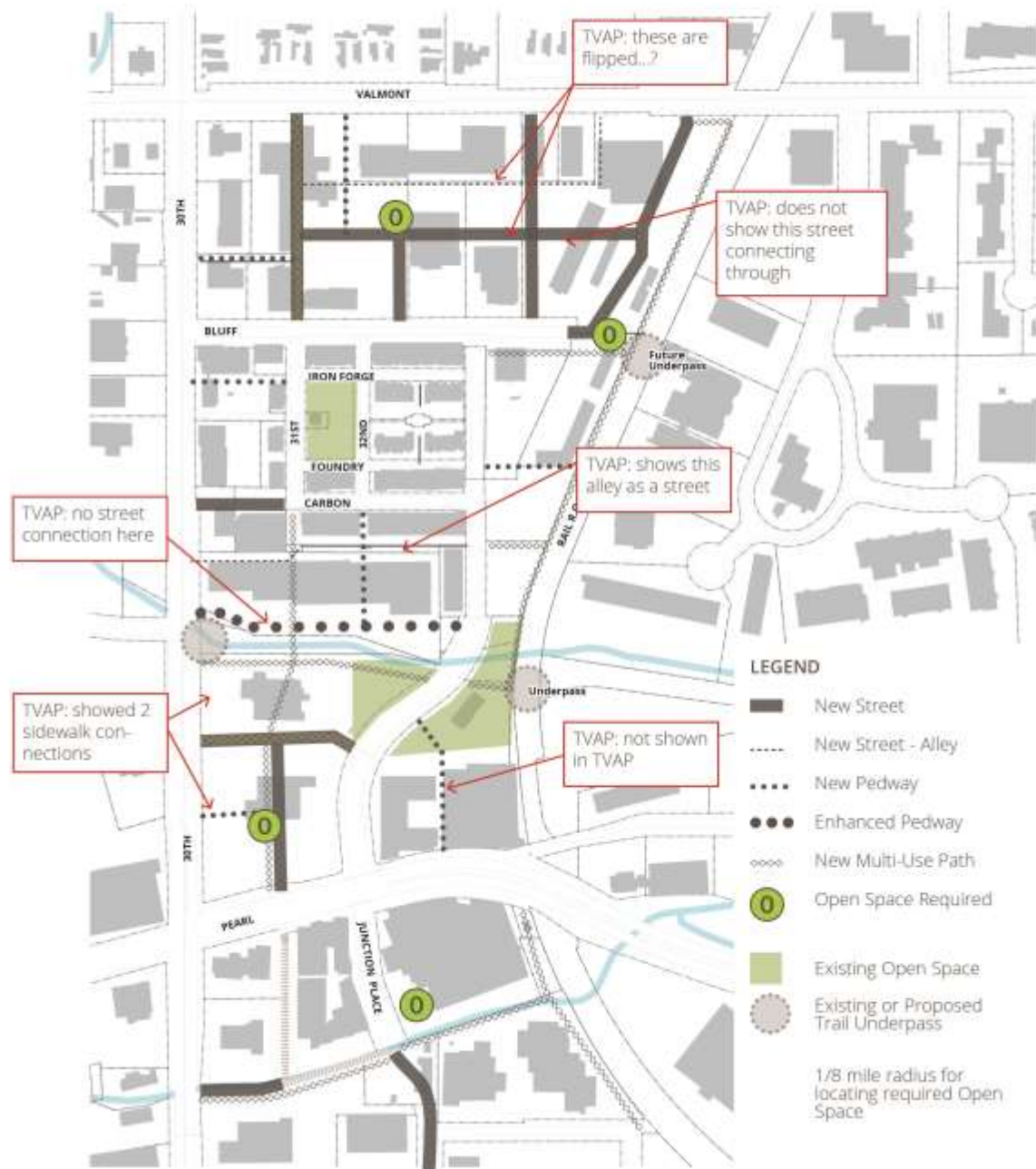
Public Realm Plan

- Generally locates New Streets, Pedways (Sidewalks), & Multi-Use Paths
- Illustrates 1/8 mile radius to Open Space
- Generally locates new Open Space Types (plazas, greens, parks)
- Verification of TVAP locations

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Public Realm Requirements for all Sites

Block & Street Layout Requirements.




Draft Components
General Building Design
Requirements

- Applicable to All Building Types
- Sets the Standards for High Quality Buildings


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C. Building Facade Elements..... 36

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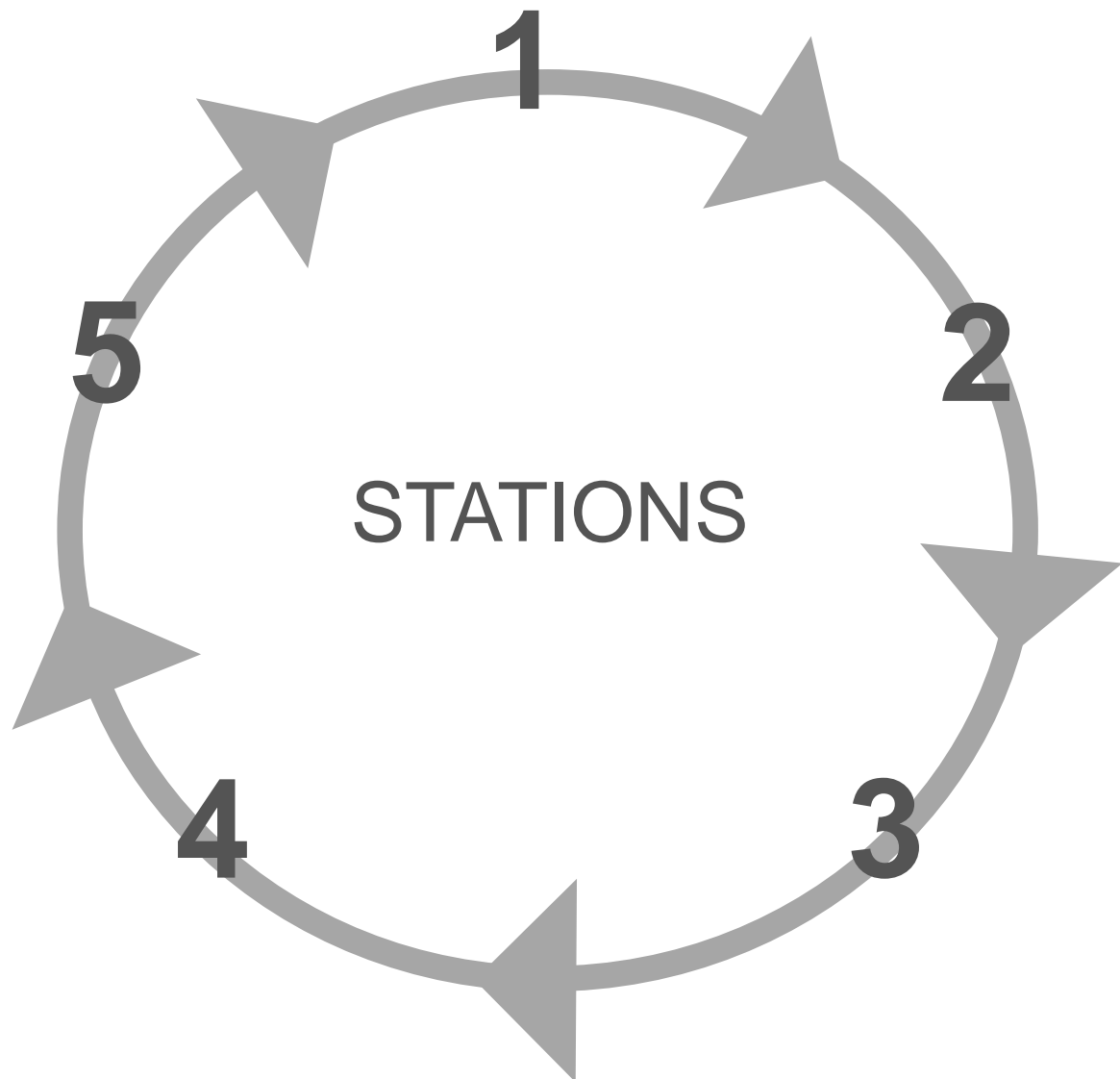
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Stations

Visit stations for discussions.

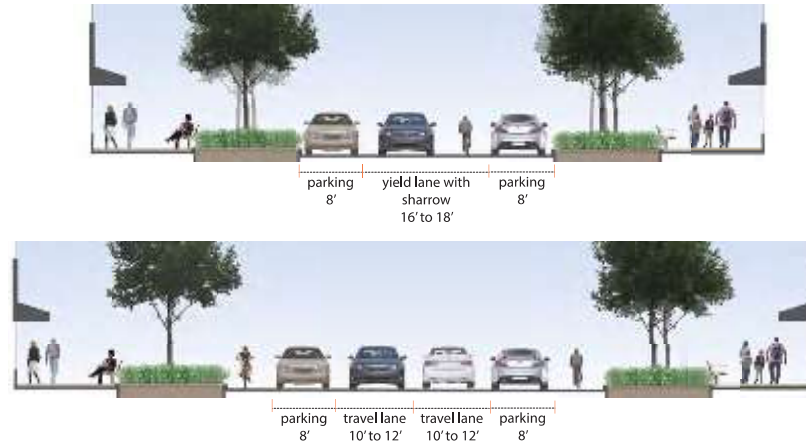


Workshop Stations

Public Realm

EXHIBIT B-3: Public Realm

Streetscapes



Pedestrian Walkways

TYPES

Pedestrian alleyway: a narrow lane or path between buildings that may have service utilities but has been modified to for pedestrian use
Paseo: a designed plaza or walkway for strolling

Passage: a walkway under or between buildings, often at least partially covered
Arcade: a covered walkway, often with archways, onto which businesses face for shopping



Passage at Walnut & 10th, Boulder



Paseo in Santa Clara, CA



Passage in Steelyards, Boulder, CO



Alley in Sacramento, CA



Paseo in Portland, OR



Alley in Los Angeles, CA



Arcade in Sydney, Australia



Alley in Fort Collins, CO

Workshop Stations

Materials & Construction

EXHIBIT C-1: Materials and Construction

Issue:

Recent projects have used a palette of materials that create a confusing facade and streetscape often due to lack of hierarchy (no primary material) and multiple contrasting accent materials.

Issue:

Recent projects have used materials that are durable but typically used in industrial settings.

Approach:

To simplify facade compositions by requiring higher quality materials, permitting fewer overall building materials and creating standards that require a primary material to cover at least 60% of the main facade.

DRAFT CODE LANGUAGE

C. FACADE MATERIALS.

- . Major Facade Materials. A minimum of 60 percent of each facade shall be constructed of major facade materials.
- . Permitted Major Materials. Major facade materials shall be high quality, durable, finish materials. The following are acceptable major facade materials. Refer to Figure 10.3-6 Example of Permitted Dominant Materials.
 - i. Stone
 - ii. Brick
 - iii. Glass
 - iv. Painted wood lap siding and shingles
 - v. Cedar wood?
 - vi. Architectural metal panels
- . Prohibited Major Materials. The following materials are not permitted for use as major facade materials:
 - i. Exposed concrete?
 - ii. Synthetic stucco
 - iii. Unfinished wood except cedar
 - iv. Concrete masonry units (CMU)
 - v. Glass block
 - vi. Vinyl siding
- . Limited Use Major Facade Materials. The following materials are permitted on rear, alley, or rail corridor facades. Permitted major facade materials from adjacent facades shall turn the corner a minimum of 15 feet, full height of the facade.
 - i. Economy Bricks. Brick types larger than 3 inches in height.
 - ii. Fiber Cement Board. Fiber cement lap siding or shingles (such as HardiePlank or HardieShingle or similar) are permitted on the Row Building Type.

iii. Cement-Based Stucco. Cement-based stucco is permitted in the upper stories of all facades and on ground story facades facing rear, alleys, the rail corridor. Other permitted major facade materials shall turn the corner of the ground story facade a minimum of 15 feet.

iv. Concrete Masonry Units (CMU). Burnished, glazed, or honed concrete masonry units (CMU) or block are permitted as major facade materials on rear, alley, and the rail corridor. Other permitted major facade materials shall turn the corner of the facade a minimum of 15 feet.

Minor Facade Materials. Minor facade materials are limited to trim, details, and other accent areas that combine to less than 20-40 percent of the total facade surface.

. Major Facade Materials. All permitted major facade materials may serve as minor facade materials.

. Permitted Minor Facade Materials. Additional minor facade materials include the following:

- i. Fiber cement and wood trim pieces
- ii. Metal for beams, lintels, trim, exposed structure, and other ornamentation

iii. Burnished, glazed, or honed concrete masonry units (CMU) or block for trim and details, but not surfaces

iv. Split-face, honed, or glazed concrete masonry units with a height less than 4.5 inches for surfaces less than 10 percent of the facade surface

v. Cast stone concrete elements

vi. Vinyl for window trim and soffits

Limited Use Minor Facade Materials. The following materials are permitted as minor facade materials on upper floor facades only:

i. Synthetic stucco or exterior insulation and finishing systems (EIFS), such as Dryvit

ii. Fiber cement lap siding or shingles (such as HardiePlank or HardieShingle or similar)

. Limited Use Minor facade Materials by Building Type.

i. Burnished, glazed, or honed concrete masonry units (CMU) or block are permitted as minor facade materials in the Workshop/Warehouse Building type for trim and details, and surfaces up to 40 percent of the facade.

ii. Split-face, honed, or glazed concrete masonry units with a height less than 4.5 inches are permitted as secondary materials in the General Building type and the General Row Building type for surfaces less than 10 percent of the facade surface.

iii. Scored concrete panels or block are not permitted.

. Appropriate Grade of Materials. Commercial quality doors, windows, and hardware shall be used on all building types with the exception of the General Row and Yardhouse Building type.

. Color. Dominant building colors shall utilize any historic palettes from any major paint manufacturer. Other colors may be utilized for details and accents, not to exceed a total area larger than 10 percent of the facade surface area.

Workshop Stations

Materials & Construction

EXHIBIT C-2: Materials and Construction

Overall Façade Material Coverage



Multiple competing materials - NOT permitted



Fewer materials, arranged with a primary material that covers more than 50% of the facade.

Major Material Types



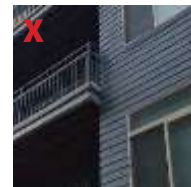
Synthetic stucco



Concrete masonry units



Plastic



Vinyl siding

Materials NOT permitted on primary facades



Brick



Cedar wood



Metal panel, glass, brick

Durable materials permitted on primary facades

Workshop Stations

Materials & Construction

EXHIBIT C-3: Materials and Construction

Issue:

Recent projects have used materials and construction techniques that will not stand up well over time and have often shown wear and tear only a short time period after construction.

Approach:

To require common construction techniques that help ensure durable and lasting buildings.

DRAFT CODE LANGUAGE

D. BUILDING CONSTRUCTION QUALITY

The intent of the building construction quality requirements is to advance the quality of the construction of new buildings and address specific issues that have been noted on recent construction.

- . Transition in Material. The following addresses changes in surface materials.
- . Corners. Where possible, changes in materials shall occur at concave or interior corners. When changes in material occur at a convex corner, the change shall occur at least 12 inches from the corner in either direction.
- . Same Surface. Transitions in surface materials that occur on the same surface or plane shall also include one of the following:
 - i. A trim piece covering the transition. The trim piece should be a whole material, as opposed to another material.
 - ii. A change in plane, where the more detailed material is above the less detailed material; e.g. brick is more detailed with more joints and stucco is less detailed as a constant surface.
- . Expression or Shadow Lines. Materials that have significant thickness may be used to create shadow or expression lines. For example, cast stone pieces may be offset to create a shadow line, where the actual convex corner of the piece is used to create the corner of the detail.

Conversely, materials that have less thickness shall not be used in such a manner as to insinuate thickness. For example, stucco should not be formed to create a pilaster on the surface.

- . Window Details. Windows shall be incorporated into the facade with trim details on at least 50 percent of the window perimeter..



Applique materials that inadequately cover the underlying structure



Transition of materials on outside corner



Flush windows



Transition of material with no trim piece or shadow line

Common construction problems in recent buildings



Material changes that create a shadow line



Material changes on interior corner

Preferred construction techniques

Workshop Stations

Proportions

EXHIBIT D-1: Façade / Building Proportions

ISSUE:

The lack of clear and specific language regarding building façade design and proportioning in the current design guidelines and code criteria has left the community disappointed with the look of recently built buildings.

APPROACH:

Create a code that specifically guides a building's façade design and mass to have aesthetically-pleasing proportions.

DRAFT CODE LANGUAGE:

D. BUILDING PROPORTIONING

The goal of the following guidelines is buildings proportion to the aesthetically pleasing proportions.

Definition of the Golden Ratio. The golden ratio is a proportioning metric used throughout history to achieve what has been considered "divine" (as in the divine proportion) or visually pleasing proportions. The ratio is frequently found in art and architecture, as well as in nature. The Fibonacci pattern (a series of numbers such as 1, 1, 2, 3, 5, 8...) is similar to the golden ratio.

Mathematically, the ratio is found by dividing a line into two parts so that the longest part divided by the smallest part is equal to the whole length divided by the longer part, written as $b/a = (b + a)/b$. Numerically, the ratio is approximately 1:1.680339887.

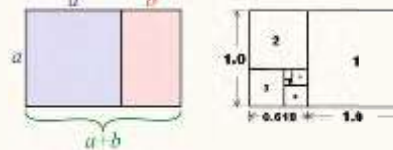
Definition of the Golden Rectangle. The golden rectangle uses the golden ratio, where the sides of the rectangle divided into a square and the remaining rectangle, fulfill the metric. Refer to Figure XXX, below.

Demonstrate Use of Golden Ratio. All projects are required to submit a diagram or series of diagrams demonstrating the use of the golden ratio in the design of the building, including the massing of the building and the design of the façade. Use of the ratio may include massing of bays, windows, divisions of the façade, overall height to width of the building, or other details. Refer to Figure XXX for examples of demonstrated use of the golden ratio.

What is the Golden Ratio (AKA the Divine Proportion)?

Two objects are in the golden ratio if their ratio is the same as the ratio of their sum to the larger of the two quantities. For example, a golden rectangle with longer side a and shorter side b , when placed adjacent to a square with sides of length a , will produce a similar golden rectangle with longer side $a + b$ and shorter side a . This illustrates the relationship:

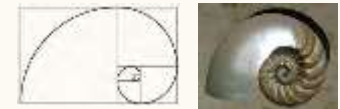
$$\frac{a+b}{a} = \frac{a}{b} = 1.6180...$$



The Golden Ratio is believed by many designers and artists to be especially aesthetically pleasing and is theorized to have been used in many famous works of art and architecture.



The Golden Ratio is intimately related to the Fibonacci spiral, which is an approximation of the golden spiral created by drawing circular arcs connecting the opposite corners of squares in the Fibonacci tiling. The golden ratio appears in some patterns in nature, including the spiral arrangement of leaves and other plant parts.



Information from Wikipedia

Workshop Stations

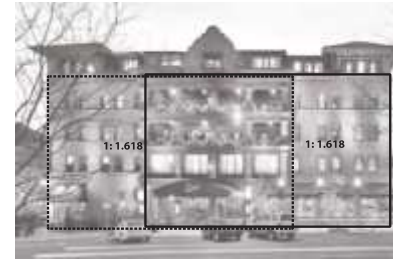
Proportions

EXHIBIT D-2: Façade / Building Proportions

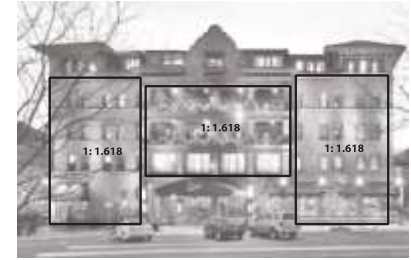
THE GOLDEN RATIO IN BOULDER

The Hotel Boulderado

The Hotel Boulderado, a beloved historic landmark, makes extensive use of the Golden Ratio for its overall mass as well as the proportioning of the main façade. Two overlaid horizontal Golden Rectangles give the basic form for the building (A); this overlap in turn creates additional Golden Rectangles (B).



A. Two Horizontal Golden Rectangles



B. Additional Golden Rectangles

Two Nine North

This recently built residential building is at Walnut & 30th Street. Aside from a few windows and doors, it does not appear to use the Golden Ratio on its façade or for its overall massing.



901 Pearl

This recently built mixed-use building is at Pearl & 9th Street. It uses Golden Rectangles throughout its façade elements and massing.



Landmark Lofts

This recently built residential development is located at the 28th Street Frontage Road and College Ave. The Golden Rectangle is used frequently to proportion façade elements and massing.



Daily Camera

This recently built mixed-use development is located at Pearl & 11th Street. The Golden Rectangle is used frequently to proportion façade elements and massing.



Workshop Stations

Building Massing

EXHIBIT E-1: Massing Bigger Projects

Issue:

Some recently built buildings in Boulder are not considered pedestrian friendly, and appear out of scale with their context. Typically, these larger projects have long facades that fail to appear as multiple buildings despite design attempts to create that effect and do not include a variation in height.

Approach:

To manage the impact of larger buildings by regulating their horizontal and vertical massing, open spaces, basic articulations, and overall scale.

DRAFT CODE LANGUAGE

A. BUILDING ARTICULATION

All buildings shall be articulated in a simple, honest manner with the goal of being human-scaled.

i. Base, Middle, Top Guidelines. Vertically layering the components of the building provides a sense of order and stability to the buildings. All buildings shall include a clearly articulated base, middle, and top as defined in the following intent statements. Refer to Figure XXX Building Base, Middle, and Cap.

i. Base. The base of a building shall/should establish an active ground story along the street and provide a public building face (such as a lobby, retail/service space, or restaurant) for all of the activities that occur within a building. Refer to XXXX Building Types for specific requirements of the ground story.

ii. Middle. The middle section of a building shall/should provide living/working/recreating space for people, to be highly transparent, and provide eyes

on the street. Balconies and terraces in the middle section of the building further meets this intent.

iii. Top. The top of the building shall/should cap the building, protecting the building and its inhabitants from the elements. The top of the building shall clearly read as the end of the building, completing the design. Refer to XXXX Roof Types.

i. Required Articulation of Stories. Stories shall be articulated on all street, pedestrianway, bicycleway, and rail facades utilizing the following.

i. Fenestration. Fenestration or window placement shall be organized by stories.

i. Expression Lines. Horizontal expression lines and lintels shall be used to delineate stories with minimum expression lines required per Building Type.

i. Mezzanines. Mezzanines treated as a separate floor to floor height and story shall be articulated on the facade as a separate story.

i. Taller Spaces. Spaces exceeding the allowable floor to floor heights of the Building Type per XXXX Building Types shall be articulated as multiple stories on the street facade.

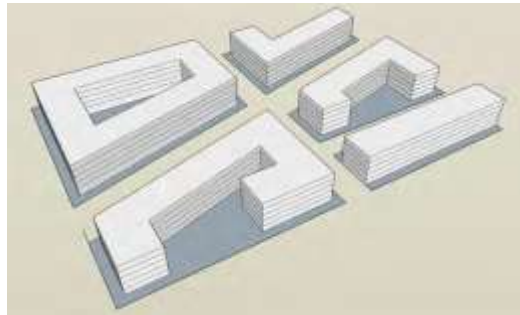
i. Adjacent Building Variety Guidelines. Building design should vary between adjacent buildings by the type of dominant material or color, scale, or orientation of that material and at least two of the following. Refer to Figure XX for one illustration of this requirement.

i. The proportion of recesses and projections.

i. The location of the entrance and window placement, unless shopfronts are utilized.

i. Roof type, plane, or material, unless otherwise stated in the Building Type requirements.

i. Heights...does an upper setback count?



Consistent 55' buildings that with no variation

Workshop Stations

Building Massing

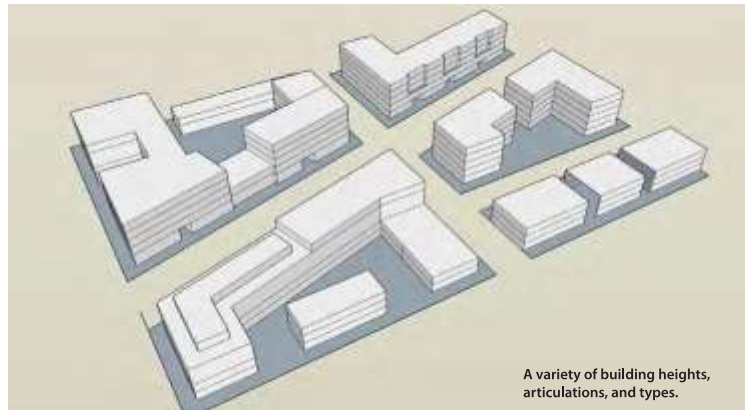
EXHIBIT E-2: Massing Bigger Projects



Courtyard



Upper Story Stepbacks



A variety of building heights, articulations, and types.



Adjacent building variety



Paseos



Change in massing

Workshop Stations

Building Massing

EXHIBIT E-3: Massing Bigger Projects



Existing

Boulder Junction is a transitioning industrial district that will be redeveloped as a Transit Village. The Master Plan calls for new streets, trails and open spaces to augment new mixed use developments.

Several projects have been completed, including reconstruction of Pearl Parkway, Solana, the Hyatt hotel and improvements to the creek.



In Progress

Currently the City is reviewing designs for three projects in Boulder Junction - shown in medium orange



Build Out

When built out, Boulder Junction will be a dense mixed-use community with a variety of uses. It will be connected by trails, streets, and sidewalks that allow residents and visitors to access transit, and other parts of the City with ease.

Thank You!

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